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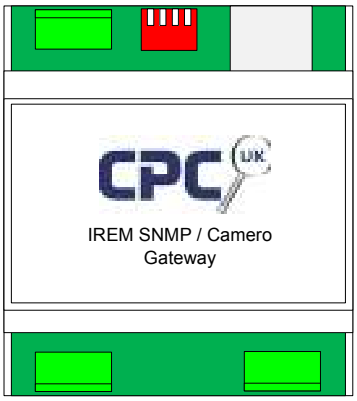

Refrigerant & Ammonia Leak Monitoring System

SNMP to Camero gateway

User Manual Version 1.01

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1. Introduction

This manual outlines the features and specifications for the IREM SNMP / Camero Gateway.

The function of the unit is to convert the RS485 based Camero communication protocol, into SNMP which is a Ethernet TCP-IP based protocol.

The Camero protocol is a propriety RS485 protocol supported by the IR-em refrigerant leak dectection unit, and allows access to variables within the IR-em such as gas PPM concentrations, alarms and operating parameters.

The SNMP (Simple Network Message Protocol), is a TCP-IP based protocol commonly used by servers to communicate with remote equipment such as routers, printers and other servers. The SNMP protocol is also used by BMS systems to communicate with remote controllers and monitoring devices – this is the intended application for the unit.

1.1 Typical schematic

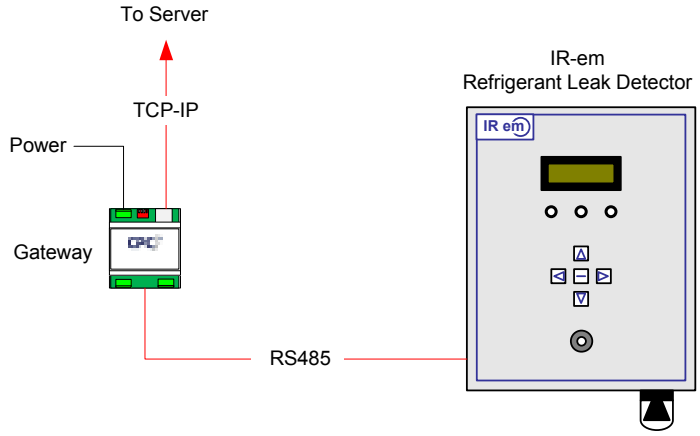


Fig 1 Schematic

2. Hardware details

The unit is supplied as a standard din rail mounting enclosure. Connections to the unit are via BL-type 2.54mm terminals and a standard Cat5 UTP connection..

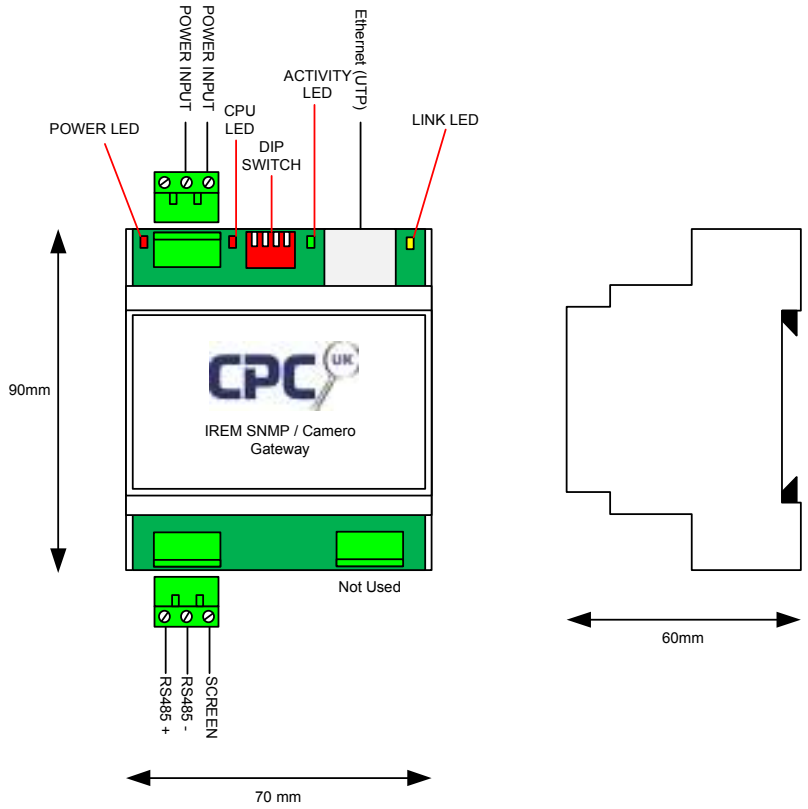


Fig 2 Layout

2.1 Power Connection

Power must be connected to the unit via the power input connections. The unit will operate from a wide range AC or DC supply;

DC = 9VDC to 24VDC (not dependant on polarity)
AC = 24VAC

Typical power consumption is 50mA @ 12VDC.

2.2 RS485 Connection

The RS485 connection is used to connect the unit to the IR-em. Screened 2 core beldan type cable should be used for connection to the IR-em.

Note : The screen must be connected.

2.3 Ethernet Connection

The Ethernet connection is used to connect the unit to an Ethernet network. A standard UTP type CAT5 Patch cable maybe used.

For direct connection to a PC or Laptop, use a CAT5 cross-over patch cable.

2.4 Indicator LED's

The indicator LED's represent the status of the unit,

Power LED – Will permanently illuminate when the unit is powered up.

CPU LED – Will flash at a regular rate if the CPU is running correctly.

Activity LED – Will flash irregularly, according to Ethernet activity.

Link LED – Will permanently illuminate when properly connected the Ethernet network.

2.5 Dip switches

There are four dip switches on the unit, only one of these is used.

Switch No 4 - Down (ON) default IP address settings and admin password will be used
Up (OFF) user set IP address settings and admin password will be used

2.6 Mounting the unit

The unit is designed to be mounted onto standard 1.5" "top hat" type din rail, within an enclosure or control panel.

3. Configuring the unit

Various settings, primarily TCP-IP settings, must be configured by the user. These are accessed via the HTML setup page.

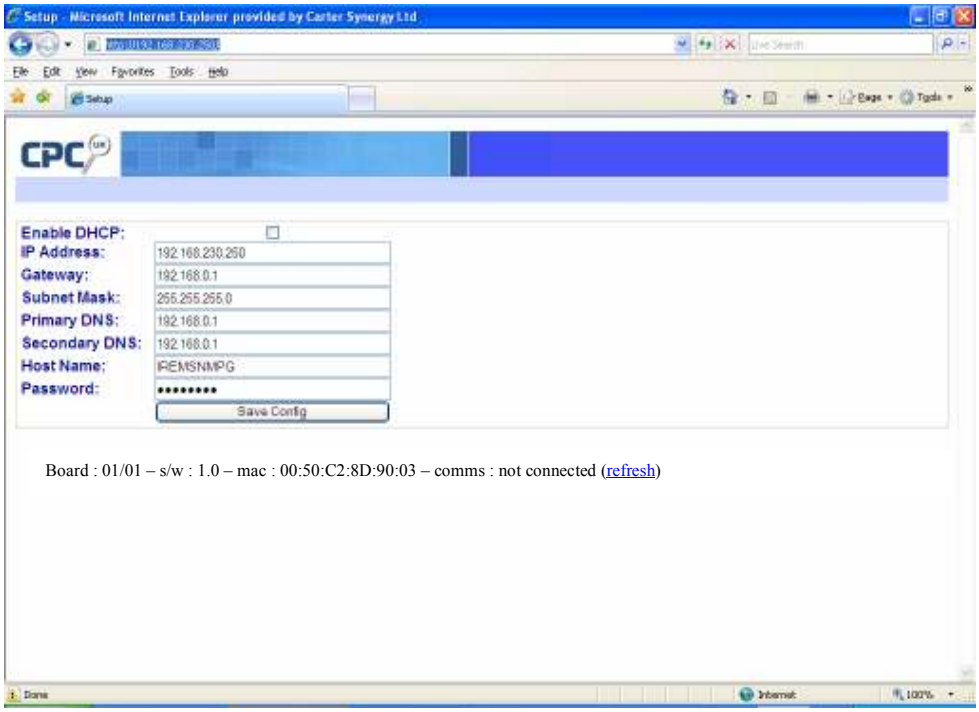

Setup - Microsoft Internet Explorer provided by Carter Synergy Ltd
File Edit View Favorites Tools Help
CPC
Enable DHCP:
IP Address: 192.168.230.250
Gateway: 192.168.0.1
Subnet Mask: 255.255.255.0
Primary DNS: 192.168.0.1
Secondary DNS: 192.168.0.1
Host Name: IREMSNMPG
Password: ••••••••
Save Config
Board : 01/01 – s/w : 1.0 – mac : 00:50:C2:8D:90:03 – comms : not connected (refresh)

Fig 3 HTML setup page

Enable DHCP : If ticked the unit will use dynamic IP addressing. If ticked you must also configure the *Primary DNS*, *Secondary DNS* and *Host name* settings.
Default = disabled (not ticked)

IP Address : The IP address of the unit, this setting only applies if DHCP is disabled.
Default = 192.168.0.140

Gateway : For future use, this setting maybe left as default.

Subnet Mask : The network subnet mask, this setting only applies if DHCP is disabled.
Default = 255.255.255.0

Primary DNS : The address of the primary DNS (Domain Name Server), this setting only applies if DHCP is enabled.
Default = 192.168.0.1

Seconday DNS : The address of the secondary DNS, this setting only applies if DHCP is enabled. If only a primary DNS is present, set the same as primary DNS.
Default = 192.168.0.1

Host Name : The host name of the unit. This is the name that will identify the unit on the DNS server. This setting only applies if DCHP is enabled.
Default = IREMSNMPG

Password : The admin password, as used to access the setup page.
Default = password

The string at the bottom of the setup page indicates the basic status of the unit,

board : The board number, for future use.

s/w : The software revision of the unit.

max : The unique mac address of the unit.

comms : The RS485 status, "not connected" IR-em not responding via RS485, "connected" IR-em online and responding via RS485.

Note : To refresh this string you must click on the "refresh" link at the end of the string.

3.1 Accessing the setup page

To access the HTML setup page;

1. Connect the unit to the Ethernet network or directly to a PC or Laptop using a cross over cable.
2. Ensure your IP address settings are within range of the unit.
3. Start the web browser application.
4. Enter the IP address of the unit into the address bar in your browser.
5. You will now be prompted to enter the setup username (always "admin") and password (default "password").
6. The setup page will now be displayed within your web browser.

Note: If you are uncertain of the IP address or password, switch dip switch 4 down (on), and the default IP address and password will apply.

3.2 RS485 / Camero setup

There are no settings within the unit for the RS485 interface. However you must ensure that the IR-em unit has been setup to use the Camero protocol, and has been setup as address 0.

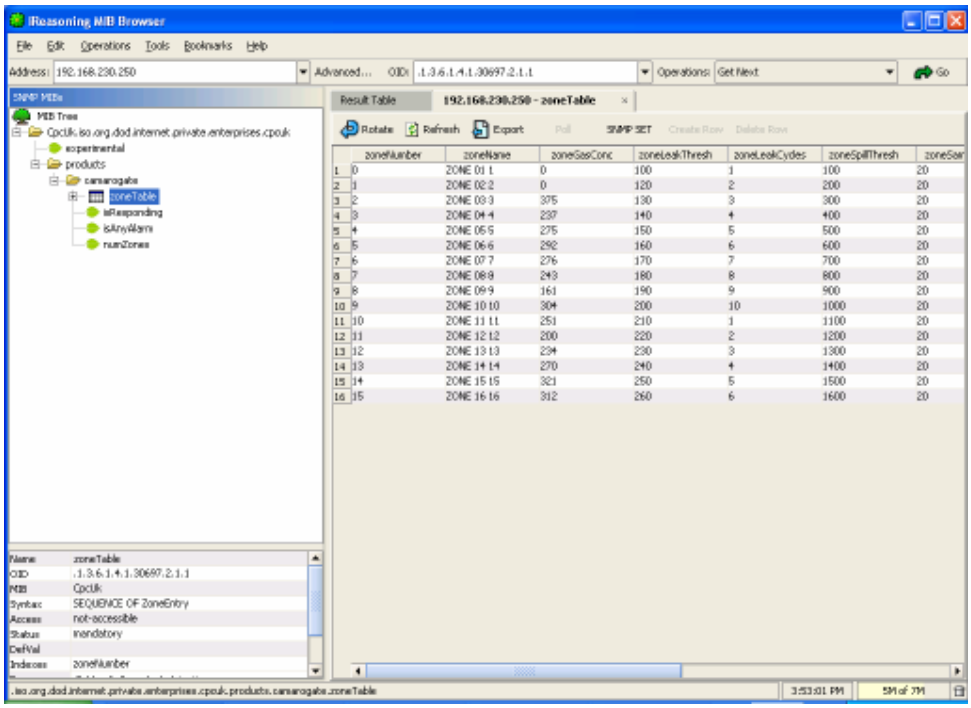
4. Checking unit operation

To check the unit is communicating to the IR-em, review the comms status within the HTML setup page – see sections **3. Configuring the unit** and **3.1 Accessing the setup page**

The check the full operation of the unit you must use the appropriate SNMP MIB (message information block) browser software. This software will enable the user to view the contents of the MIB structure, and therefore verify the unit is operating correctly.

This manual explains how to check the operation of the unit using the iReasoning MIB Browser (Personal edition) software package, which can be downloaded for free from;

http://www.ireasoning.com/downloadmibbrowserfree.php


iReasoning MIB Browser
File Edit Operations Tools Bookmarks Help
Address: 192.168.230.250
Advanced...
OID: .1.3.6.1.4.1.30697.2.1.1
Operations: Get Next
Go
SNMP MIBs
MIB Tree
Cpcuk.iso.org.dod.internet.private.enterprises.cpcuk
experimental
products
canarogate
zoneTable
isResponding
isAnyAlarm
numZones
Result Table
192.168.230.250 - zoneTable
Rotate
Refresh
Export
Poll
SNMP SET
Create Row
Delete Row
zoneNumber
zoneName
zoneGasConc
zoneLeakThresh
zoneLeakCycles
zoneSpillThresh
zoneSen
1 0 ZONE 01 1 0 100 1 100 20
2 1 ZONE 02 2 0 120 2 200 20
3 2 ZONE 03 3 375 130 3 300 20
4 3 ZONE 04 4 237 140 4 400 20
5 4 ZONE 05 5 275 150 5 500 20
6 5 ZONE 06 6 292 160 6 600 20
7 6 ZONE 07 7 276 170 7 700 20
8 7 ZONE 08 8 243 180 8 800 20
9 8 ZONE 09 9 161 190 9 900 20
10 9 ZONE 10 10 304 200 10 1000 20
11 10 ZONE 11 11 251 210 1 1100 20
12 11 ZONE 12 12 200 220 2 1200 20
13 12 ZONE 13 13 234 230 3 1300 20
14 13 ZONE 14 14 270 240 4 1400 20
15 14 ZONE 15 15 321 250 5 1500 20
16 15 ZONE 16 16 312 260 6 1600 20
Name zoneTable
OID .1.3.6.1.4.1.30697.2.1.1
MIB Cpcuk
Syntax SEQUENCE OF ZoneEntry
Access not-accessible
Status mandatory
DefVal
Indexes zoneNumber
3:53:01 PM
5M of 7M
Fig 4 iReasoning MIB browser

You must also obtain a copy of the current MIB file for the unit, available from CPC UK technical support.

The check the operation of the unit;

1. Connect the unit to the Ethernet network or directly to a PC or Laptop using a cross over cable.

2. Ensure your IP address settings are within range of the unit.

3. From your PC or Laptop, carry out a ping test to the unit. i.e. from the command prompt type ping xxx.xxx.xxx.xxx (replacing xxx.xxx.xxx.xxx with the units IP address).

4. Start the MIB browser software.

5. Load the units MIB file into the browser software,
   Click file
   Click "Load Mib",
   Select the location of the MIB file.

6. Enter the IP address of the unit into the address bar at the top of the screen.

7. Expand the MIB tree, until "isResponding" is highlighted.

8. Right click on "isResponding" and select "Get" – the window on the right now report the status of this variable, 1 = IR-em responding via RS485, 0 = IR-em not responding via RS485.

9. To refresh the status, click on "Refresh" in the toolbar above the table window.

10. To view all zone information from the IR-em, Expand the MIB tree, until "zoneTable" is highlighted.

11. Right click on "zoneTable" and select "Table View" – a table showing all zone names, readings and thresholds will be displayed.

12. To refresh the table, click on "Refresh" in the toolbar above the table window.

5. SNMP MIB structure

The MIB contains all the information read from the unit via the RS485 Camero interface.

The table below details all the variables accessible via the MIB,

Variable Name	Within zoneTable ?	Description	Notes
zoneNumber	Yes	Fixed – the units zone number	
zoneName	Yes	The zones name	
zoneGasConc	Yes	The zones concentration	
zoneLeakThresh	Yes	The zones leak alarm threshold	
zoneLeakCycles	Yes	The zones leak alarm cycles	
zoneSpillThresh	Yes	The zones spill alarm threshold	
zoneSampTime	Yes	The zones sample time	
zoneFlowAlm	Yes	The global flow fault status	Will be set to "1" for all zones if a flow fault is present on any zone.
zonePresAlm	Yes	The global pressure fault status	Will be set to "1" for all zones if a pressure fault is present on any zone.
zoneSpillAlm	Yes	The global spill alarm status	Will be set to "1" for all zones if a spill alarm is present on any zone.
zoneLeakAlm	Yes	The zones leak alarm status	
isResponding	No	Indicates if the IR-em unit is responding via RS485	
isAnyAlarm	No	Indicates if any alarms are present	Will be set to "1" if any alarm is present on any zone or within the unit.
numZones	No	Indicates the number of zones	8 or 16

Table 1 MIB details.

Individual leak, spill, pressure and flow faults / alarms are not available via the RS485 Camero interface. Therefore the leak alarm is calculated per zone by the unit, using the following method,

Add up all the sample times for all the zones to get a total sample time.

For each zone:
Multiply the total sample time by the zone's leak cycles (minus 1) to get an alarm confirmation period.
If the mode is " sequential" **AND** zone gas concentration has been >= zone leak threshold for alarm confirmation period **AND** Zone sample time is not set to "0" AND Leak cycles not set to "0".
Set the zone leak alarm point on SNMP
Else
Clear the zone leak alarm point on SNMP

Notes:
1. The total sample time needs to be continously calculated to take into account users changing the sample time values and enabling and disabling zones (see below)
2. If the mode (obtained from GetStatus) is not 3 ('sequential') then all SNMP leak alarms must be cleared and their confirmation timers reset.
3. A zone can be disabled by setting the sample time to zero. This is benign w.r.t. computation of alarm confirmation period.
4. A zone can be set up to be still sampled, but generate no leak alarm by setting its leak cycles to 0. In this case the SNMP alarm must not be generated, but the sample time must still be used in the total (So, again this is benign w.r.t. computation of alarm confirmation period).